BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Revision of Part 15 of the Commission's	)	ET Docket No. 98-153
Rules Regarding Ultra-Wideband	)	
Transmission Systems	)	

To: The Commission

REPLY COMMENTS OF GARMIN INTERNATIONAL, INC.

GARMIN International, Inc. ("GARMIN"), pursuant to Section 1.415 of the Commission's rules (47 C.F.R. § 1.415), submits these reply comments in connection with the Commission's Notice of Proposed Rule Making ("NPRM") in the above-captioned docket. In response to the Commission's solicitation of comments concerning possible changes in its regulations to permit use of various types of ultra-wideband ("UWB") technology, more than fifty parties have filed comments and approximately seventy-five others have filed brief letters.

The initial round of comments encompasses a broad cross-section of current spectrum users, many of which express strong reservations about the potential for interference from UWB into their existing services, particularly those that operate below about 3 GHz. A significant number of the comments are letters that support UWB technology in general terms, but offer no substantive input concerning the technology or its potential to interfere with existing services. None of these letter commenters expresses any preference concerning the frequency bands where UWB might be

developed, instead expressing a general belief that the technology might be used to provide them some type of benefit.

Overall, the majority of parties submitting substantive comments in this proceeding emphasize several common themes. First, they agree that there should be no authorization of any UWB applications until thorough and competent testing is complete and the results are fully analyzed. Many observe, as GARMIN did in its initial comments,[1] that there is a need to gain a complete understanding of the time-domain nature of UWB emissions, and the ways in which such emissions are different from the current frequency-domain regime, before moving forward to adopt any rules to govern potential commercial use of this technology.[2] Moreover, these parties highlight the fact that there are a wide variety of applications that could employ UWB technology, and these different applications will have distinct impacts on other spectrum users. They note that the Commission must take into account the significant differences among these various UWB devices, including the different interference profiles of devices emitting discontinuous pulses and those that employ continuous waves.[3]

Second, many of these same commenters note that, in light of the need for thorough evaluation of UWB technology, the FCC's timeline for

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[1] *See* Comments of GARMIN International, Inc., ET Docket No. 98-153, at 6-7 (filed on September 12, 2000) ("GARMIN Comments"). Unless specifically indicated to the contrary, all references in these Reply Comments to comments are to comments filed in response to the NPRM.

[2] *See, e.g.,* Comments of the Aircraft Owners and Pilots Association at 1-4 ("AOPA Comments"); Comments of The Boeing Company at 4-5 ("Boeing Comments"); Comments of Motorola, Inc., at 2; Comments of the National Business Aviation Association, Inc., at 2, 12, 16, 17, 20; Comments of QUALCOMM Incorporated at 2, 4-5; Comments of SiRF Technology, Inc., at 3-4; Comments of Sprint Corporation at 2, 6 ("Sprint"); Comments of the U.S. GPS Industry Council at 3, 37, 40 ("USGPS Council"); Comments of XM Radio Inc. at 12 ("XM Radio Comments").

[3] *See, e.g.,* Comments of AT&T Wireless Services, Inc., at 3-5; Sprint Comments at 6; USGPS Council Comments at 34-35.

testing is too short to consider the variety of variables that must be taken into account, including the distinctions between pulse and continuous wave devices, and the potential aggregate impact of UWB transmitters.[4] Considering all of the factors that must be evaluated, it is unrealistic to expect that the Commission will be in a position to take action in this docket based solely upon the initial data submitted to it – which is due to be filed in only three days time. As GARMIN stated in its initial Comments, the Commission cannot reasonably adopt comprehensive rule changes affecting a major portion of the services it regulates based on such minimal testing. This view is echoed by the Department of Aeronautics and Astronautics at Stanford University, which is responsible for one of the ongoing technical trials and notes that the iterative nature of testing requires multiple phases in order to allow sequential focus as initial tests help to define areas for additional, more focused study.[5]

Third, there is also a strong belief among a significant number of parties that the licensing of most or all UWB devices that are ultimately allowed is necessary because Part 15 rules will not sufficiently protect existing services from interference produced by UWB devices.[6] The aggregate effect of large networks of UWB devices remains an unknown that must be evaluated through exacting experimentation, yet even in the absence of test data, it is clear that if devices were to be operated on an unlicensed basis, there would be no ability to regulate the total radiated power being

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[4] *See, e.g.*, AOPA Comments at 1-4, 13; Comments of Metricom, Inc. at 6-7; Comments of Rockwell Collins, Inc., at 3-5; Comments of Stanford University at 1, 2 ("SU Comments"); USGPS Council Comments at 35-37; XM Radio Comments at ii, 11-12.

[5] *See* SU Comments at 1.

[6] *See, e.g.*, Boeing Comments at 11-12, 14; Comments of Sirius Satellite Radio Inc. at 20-21; USGPS Council Comments at 49-51.

emitted by these devices per unit of area. Even for individual radar and imaging devices, some sort of licensing may well be necessary to place a regulatory control on the number of devices deployed, and thereby ensure that the conditions required for protection of safety services are closely observed.

Notably, a number of parties that are strong supporters of UWB technology echo some of these same themes in their comments. Several of these UWB proponents explicitly support restrictions on UWB to varying degrees, acknowledging the potential for interference impact.[7] For example, Lucent observes that the cumulative impact of multiple UWB devices can exceed the simple additive effect that would be expected simply from the overlapping pulse trains of two UWB devices, and thus might produce a continuous interference pattern to a victim receiver.[8]

In short, the comments, from responsible parties on all sides of the issue, recognize the need for thorough and rigorous testing before any final rules regarding UWB devices can be adopted. To develop reliable testing data concerning overall UWB compatibility with existing services, a broad range of tests will be required, and sufficient time must be allowed to complete these tests and to permit all concerned parties to evaluate them before any changes to the Commission's rules are adopted. Finally, once tests have been completed, it will be necessary for the Commission to consider whether – and, if so, how – the new technology can be introduced without compromising existing spectrum-based services.

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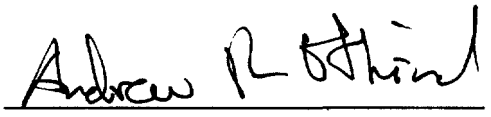
[7] *See, e.g.,* Comment of Lucent Technologies Inc. at 5 ("Lucent Comments"); Comments of Multispectral Solutions, Inc., at 2-9.

[8] *See* Lucent Comments at 5.

The Commission should remain mindful that its overarching responsibility is to advance the public interest, convenience and necessity with respect to all types of communications and the use of the radiofrequency spectrum generally. The Commission should therefore remain vigilant in its protection of existing radio technologies used for communication and radiolocation – particularly critical safety and navigation uses – as it considers the prospects for deploying new technology in the same frequency bands already in use to deliver these critical services to the American public.

Respectfully submitted,

By: 

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